POCKET LASER RANGEFINDER

2001 Joint Services Small Arms Symposium

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Abstract

Subject Terms

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Number of Pages
20

Outline

- Pocket Laser Rangefinder (PLRF)
- Range improvement
- Laser Rangefinder/Digital Magnetic Compass Module

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LEICA PLRF - Pocket Laser Rangefinder

- Range > 1km
- Pocket size rangefinder
- Handheld
- Button operated
- Adaptation to NV
- IAW MIL-STD 810
- Submersible 66 ft

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LEICA PLRF - General Characteristics

Rangefinder

- Range performance: 50 - 1000 m
  (albedo 0.1, target size 1 x 1 m)
- Measurement range: 5 - 2500 m
  (theoretical on display)
- Accuracy: ± 2 m
- Diode laser: 905 nm
  1550 nm
- Eye-safety: Class 1
  according to ANSI Z 136.1 (2000)

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LEICA PLRF - General Characteristics

Miscellaneous

- Battery capacity: > 5000 shots
- Dimensions: 4.5 x 3.7 x 1.7 inch
- Weight: 17 oz
- Interface: NV AN-PVS14

Optics

- Magnification: 6 x 30
- Configuration: monocular

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PLRF - Status

- Order for 2 each ETU (engineering test unit) from Department of the Navy, USA

- 2 x ETU, 905 nm technology delivered in April 2001
- 2 x ETU, 1550 nm technology delivered in July 2001

- Currently undergoing operational tests

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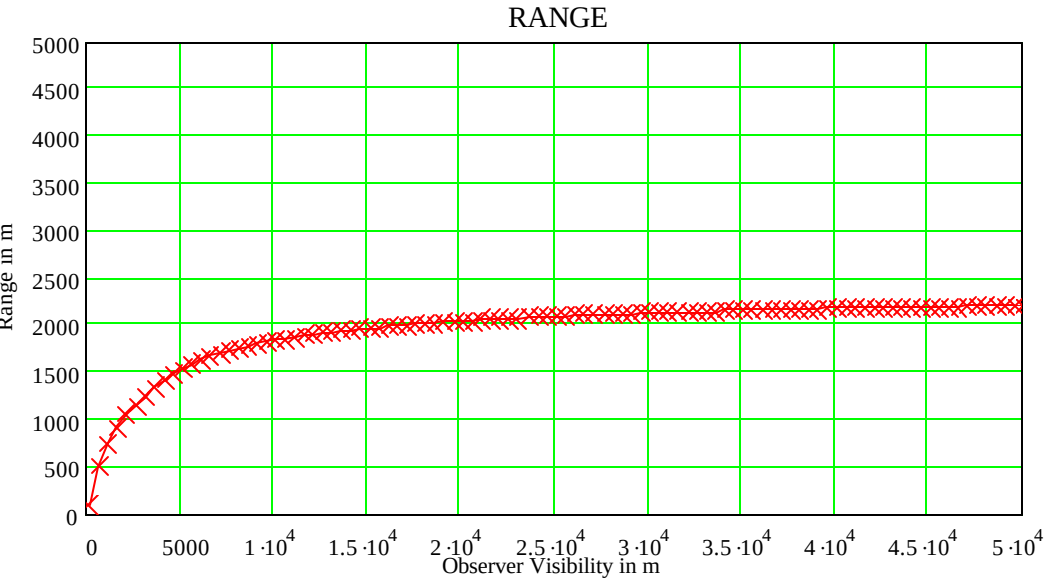
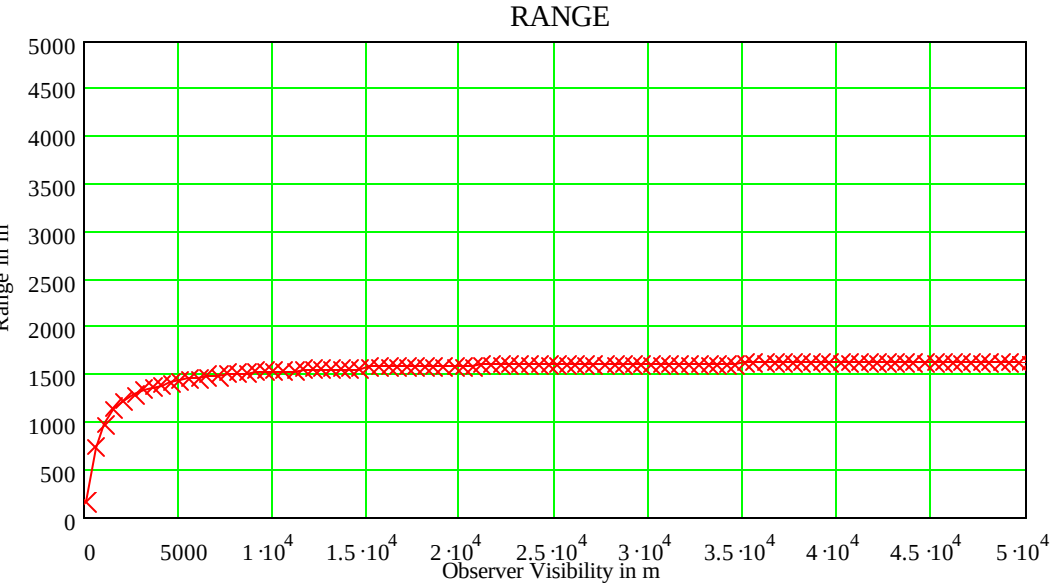
PLRF Range versus Visibility



Target size 2.3 m (NATO), Albedo 0.1

Wavelength: 905 nm

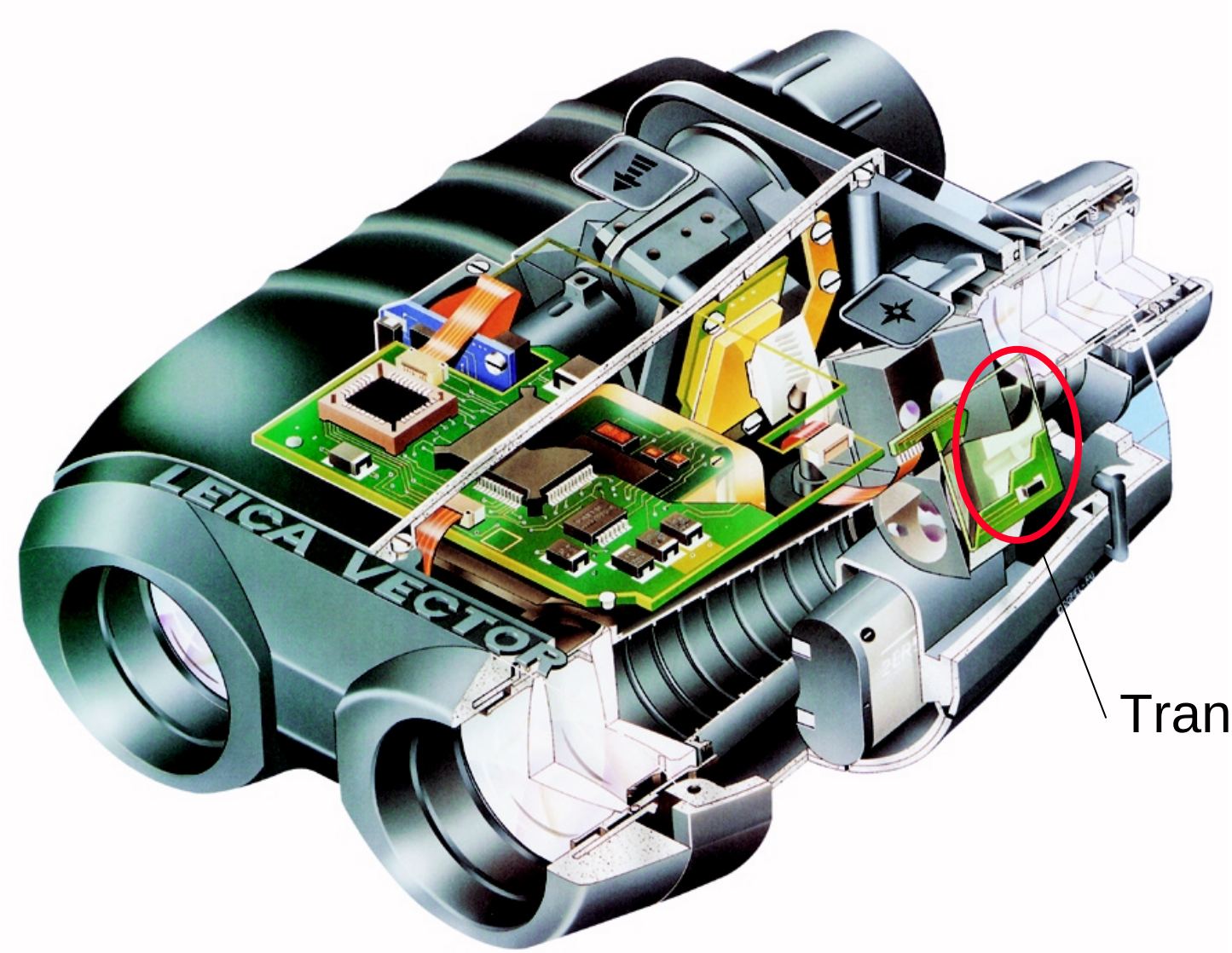
Beam Divergence: 0.4 x 1.3 mrad



Wavelength: 1,550 nm

Beam Divergence: 2.0 x 2.0 mrad

Range Enhancement – Vector/Viper Test Bed



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VECTOR IV/VIPER Beam Shaper

Goal : **Range Improvement**

VECTOR IV/Viper

- Beam divergence 2.0 x 2.0 mrad
- Effective optical laser output 19 %

VECTOR with Beamshaper

- Beam divergence 0.7 x 0.3 mrad
- Effective optical laser output 45 %

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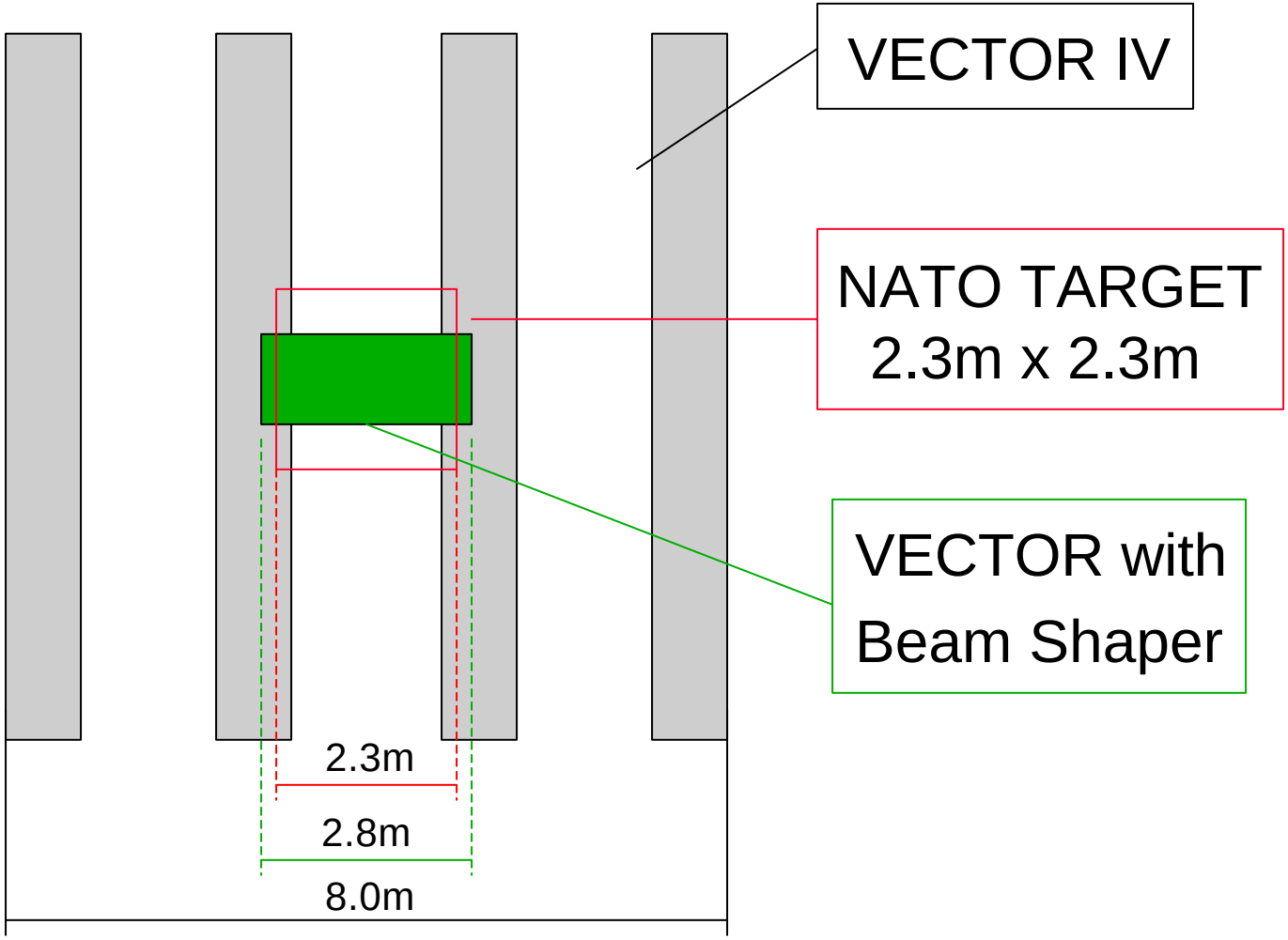
Irradiance in Target Plane (on scale) at 4 km



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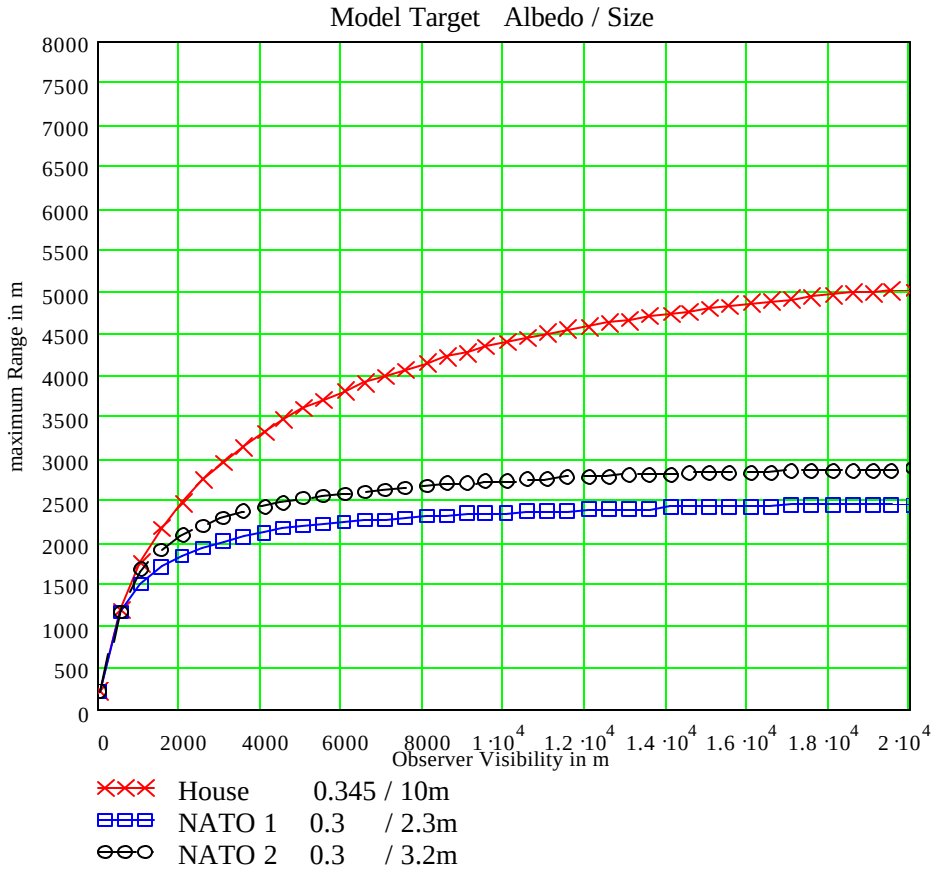
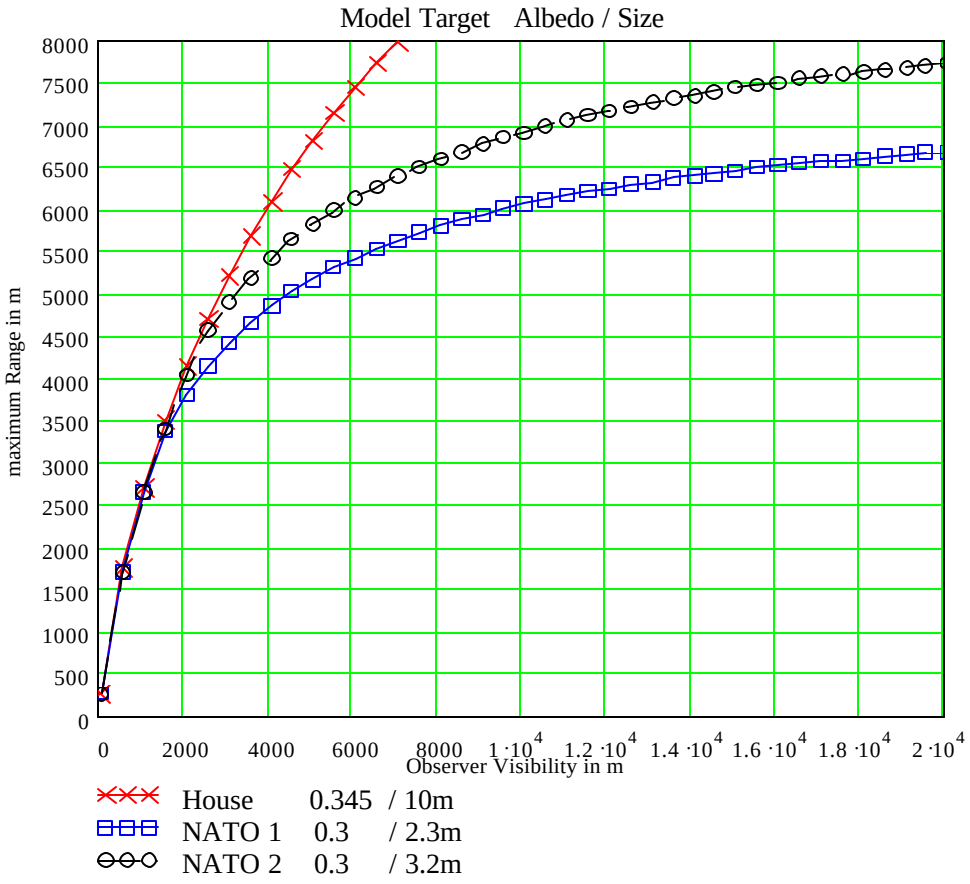
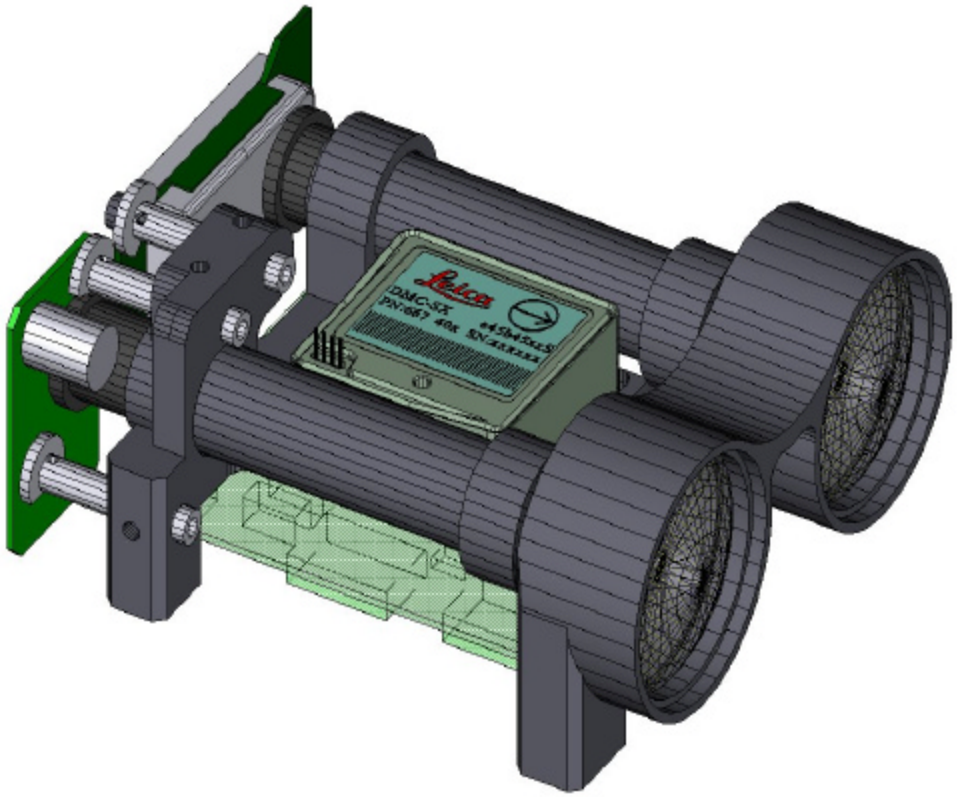
Range of VECTOR IV



Range of VECTOR with Beamshaper



Laser Rangefinder/Digital Magnetic Compass Module



Range

- Range 5 m up to 2500 m
- Wavelength 905 nm and 1550 nm
- Class 1 Eye Safe
  (ANSI Z136.1-2000 & EN 60825-1 1994)

Heading & 2-axis tilt

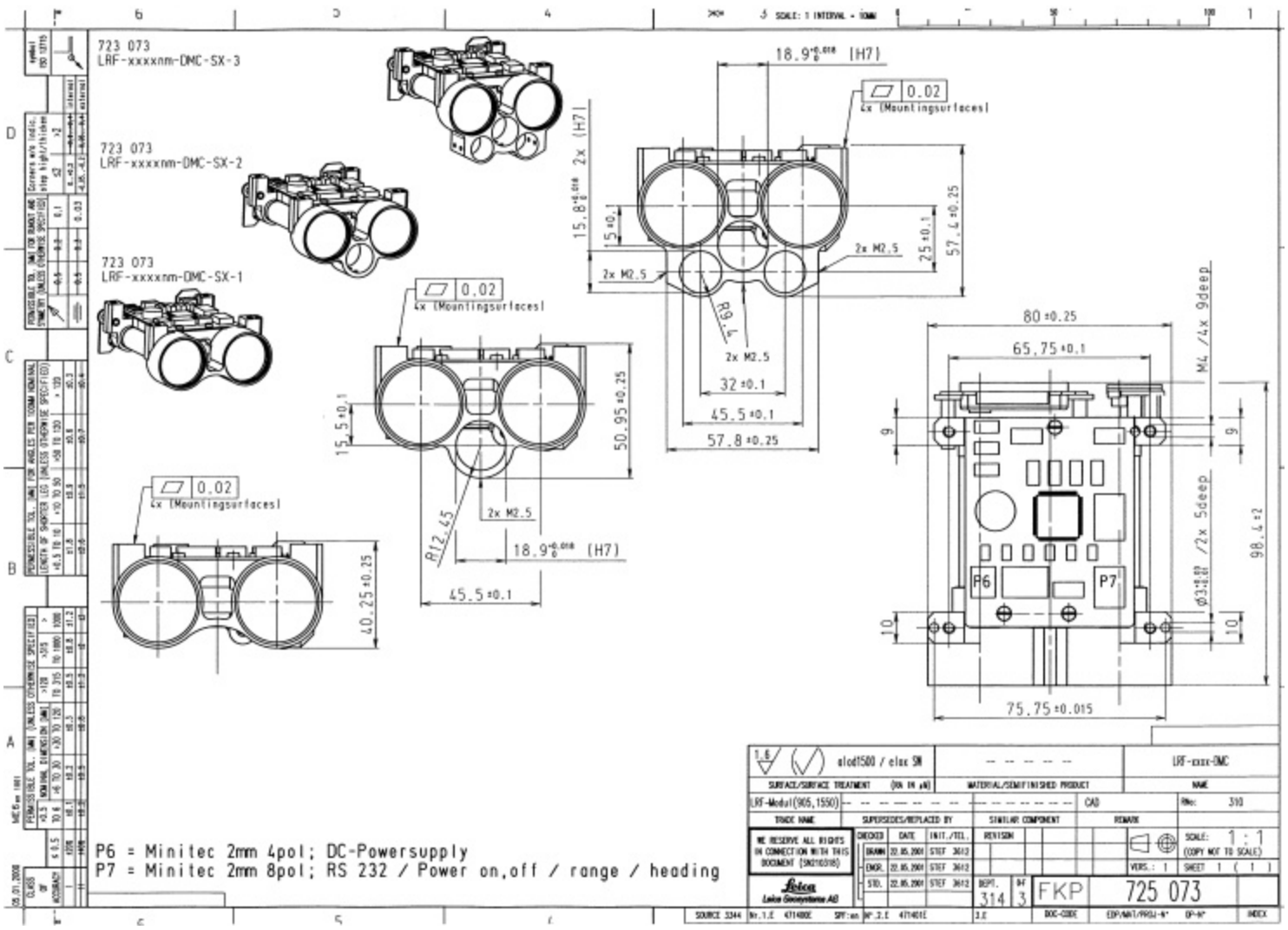
- Azimuth accuracy 0.5°, independent of elevation and bank positions
- Elevation and bank up to +/- 80°
- Built-in 3D magnetic compensation

Physical characteristics

- L x W x H: 3.9 x 3.1 x 1.7 inches
- Weight (as shown): ≈ 8 oz.

LRF-DMC Module, Top View

LRF-DMC Module Options



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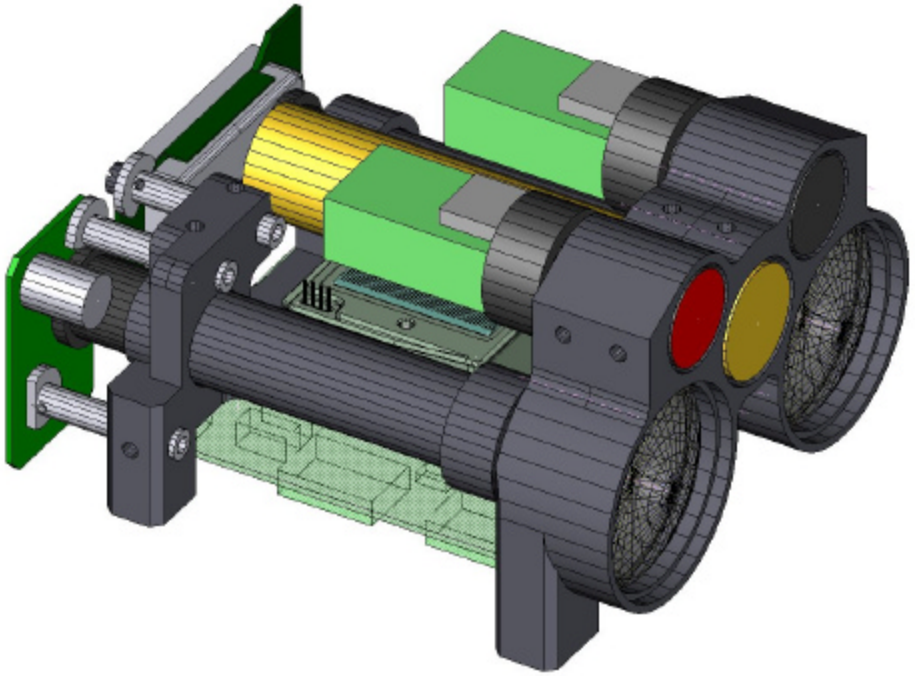
LRF – DMC Module with optional boresighted ports

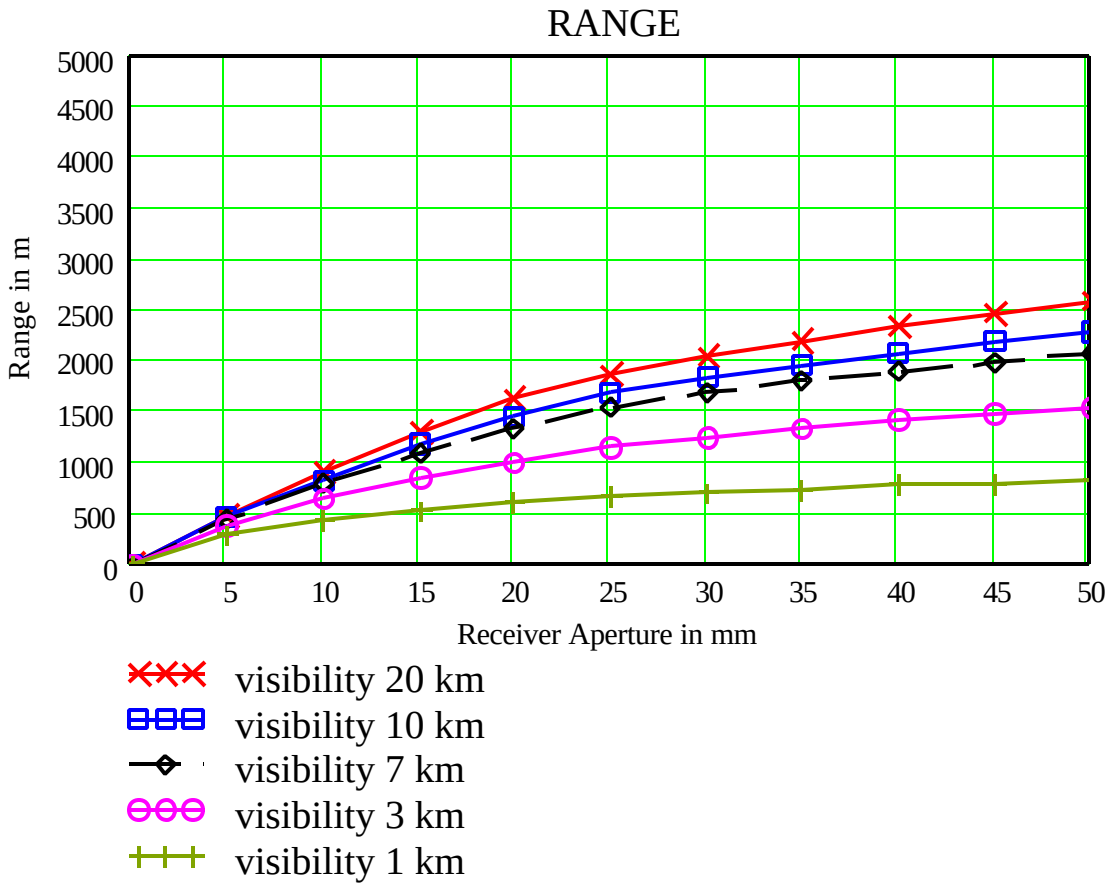


- Laser Rangefinder
- Digital Magnetic Compass
- Pitch and Cant
- Digital Output

- Option example
  - Color video camera
  - B & W video camera
  - Laser pointer

Module Range versus Receiver Aperture

Target size 2.3 m (NATO), Albedo 0.1

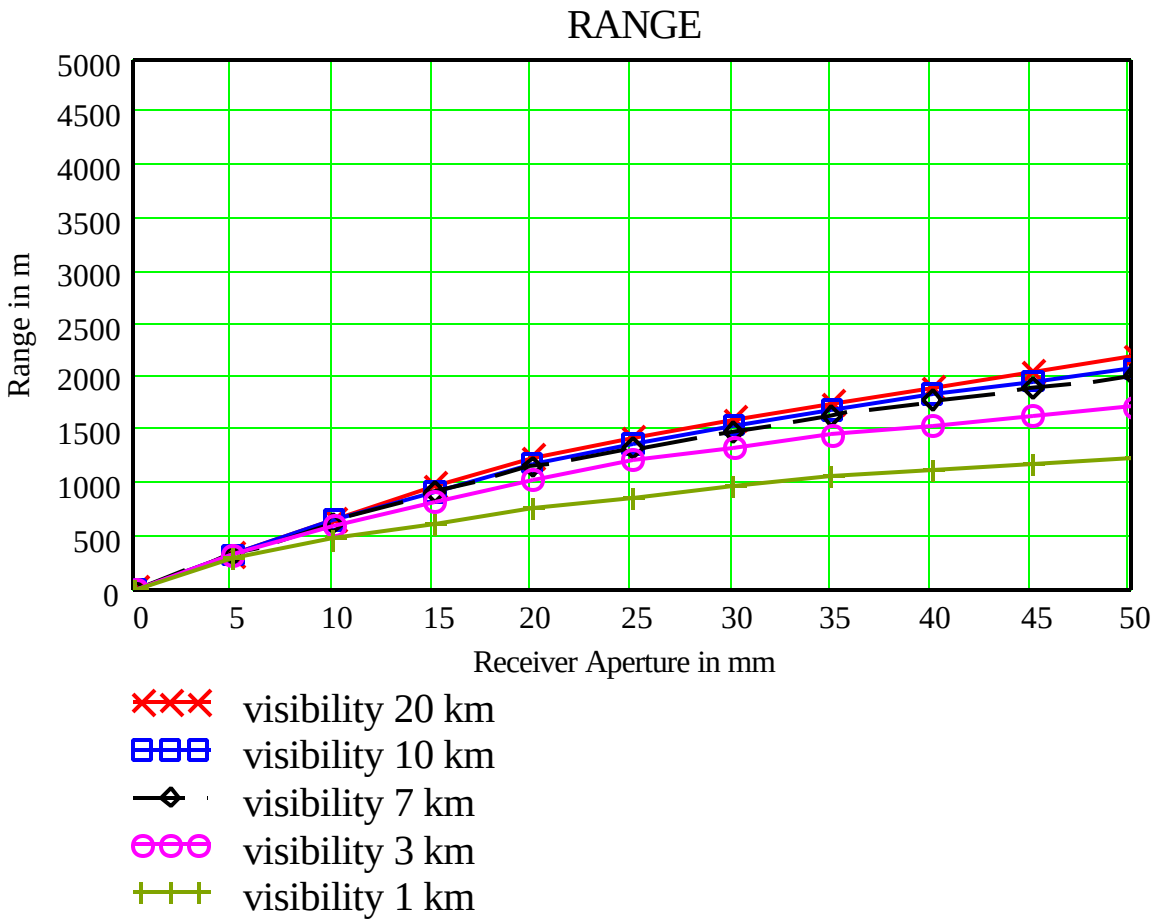


Wavelength: 905 nm

Beam Divergence: 0.4 x 1.3 mrad

Module Range versus Receiver Aperture

Target size 2.3 m (NATO), Albedo 0.1

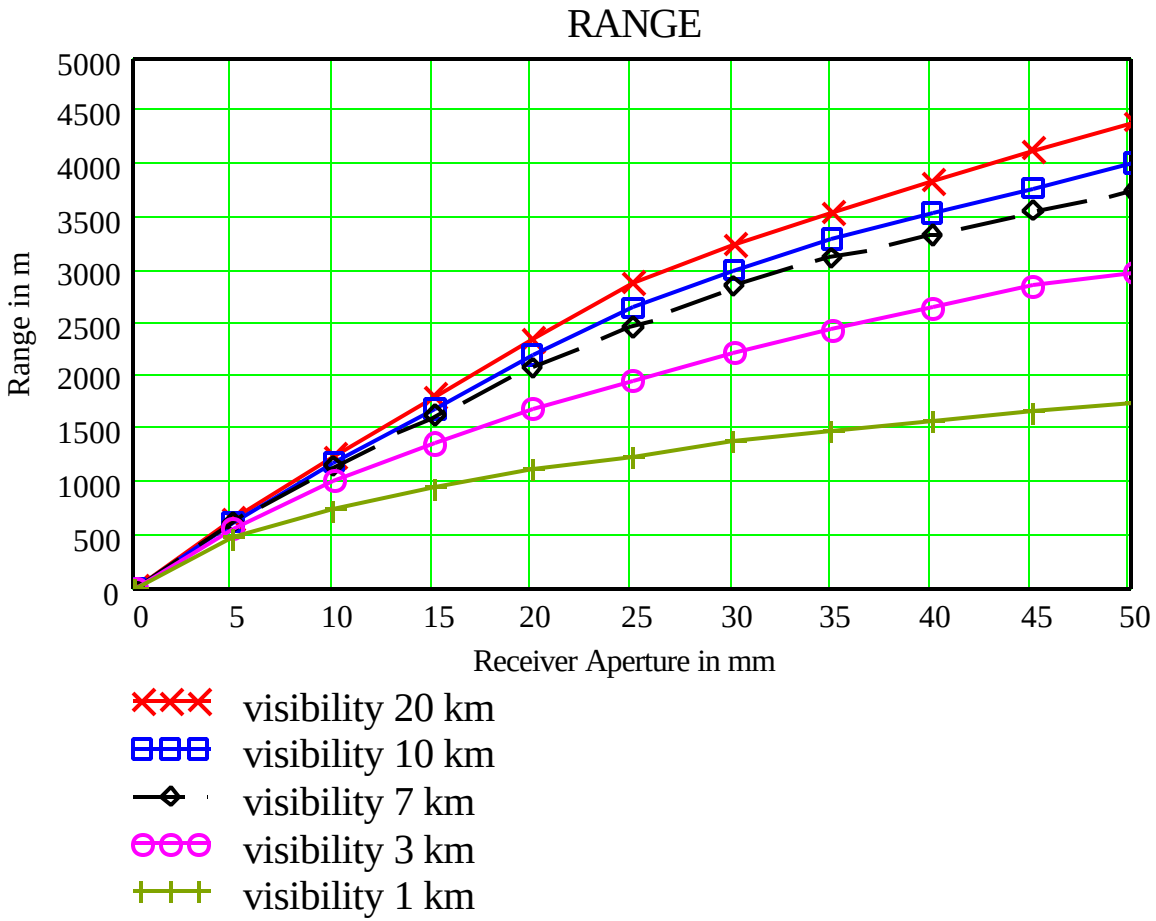


Wavelength: 1,550 nm

Beam Divergence: 2.0 x 2.0 mrad

Module Range with Beam Shaper versus Receiver Aperture

Target size 2.3 m (NATO), Albedo 0.1



Wavelength: 1,550 nm

Beam Divergence: 0.7 x 0.3 mrad

Summary

- 4 X PLRFs in OT
- Range enhancement developed with beam shaper
- Beam Shaper imbedded in Viper ~ doubles range performance
- New LRF-DMC module developed
- Several module options available

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